PART I - ADMINISTRATIVE

Section 1. General administrative information

Title of project	
Inventory and Assessment of Irrigation Diversion Alternatives to Push-up Dams in the John Day River Basin, Oregon	
BPA project number	**20077**
Contract renewal date (mm/yyyy)	
Multiple actions? (indicate Yes or No)	
Business name of agency, institution or organization requesting funding	
US Bureau of Reclamation, Lower Columbia River Area Office	
Business acronym (if appropriate)	**BOR**
Proposal contact person or principal investigator:	
Name	**Michael Newsom/Dave Nelson**
Mailing address	**825 NE Multnomah Street #1110**
City, ST Zip	**Portland, OR 97232**
Phone	**503-872-2795**
Fax	**503-872-2797**
Email address	mnewsom@pn.usbr.gov
NPPC Program Measure Number(s) which this project addresses	
7.6A,B,C, 7.7	
FWS/NMFS Biological Opinion Number(s) which this project addresses	
Other planning document references	
Wy-Kan-Ush-Mi Wa-Kish-Wit, vol I, chap. 3, pp 3-22, 5B-13; vol II, p. 40; Oregon Governor's Watershed Enhance Board (GWEB) Watershed Project Priorities	
Short description	
Perform an inventory and assessment of diversion structures in the John Day River basin in order to support Council Program measures 7.6 and 7.7, in particular, the re-establishment of fish habitat and passage lost to human activity associated with irrigated farming.	
Target species	
spring chinook; summer steelhead	

Section 2. Sorting and evaluation

Subbasin
Lower Mid-Columbia, John Day River Basin

Evaluation Process Sort

CBFWA caucus		CBFWA eval. process		ISRP project type	
X one or more caucus		If your project fits either of these processes, X one or both		X one or more categories	
x	Anadromous fish	x	Multi-year (milestone-based evaluation)		Watershed councils/model watersheds
	Resident Fish	x	Watershed project eval.	x	Information dissemination
	Wildlife				Operation & maintenance
					New construction
					Research & monitoring
					Implementation & mgmt
					Wildlife habitat acquisitions

Section 3. Relationships to other Bonneville projects

Umbrella / sub-proposal relationships. List umbrella project first.

Project #	Project title/description

Other dependent or critically-related projects

Project #	Project title/description	Nature of relationship

Section 4. Objectives, tasks and schedules

Past accomplishments

Year	Accomplishment	Met biological objectives?
1994	**Water Conservation Demonstration Projects - John Day River Basin, (Twenty projects divided into four phases under the NPPC's 1994 F&W Plan, Measure 7.8.H)**	**Phase I Replaced push-up dams with fish-friendly habitat and passage.** **Phase II Used underground field drains to reduce water temperatures of irrigation return flows.** **Phase III Continued push-up dam replacements.** **Phase IV Monitoring and report writing (FY1999)**.

Objectives and tasks

Obj 1,2,3	Objective	Task a,b,c	Task
1	**Inventory of Diversion Structures in entire John Day River Basin**.	**a**	**Locate and map diversion structures.**
		b	**Measure physical site dimensions, identify stream type, water right (rate and duty), water use, and water measurement practices.**
		c	**Collect relevant fish resource data associated with diversion structure sites.**
2	**Assessment of replacement diversion structures, potential restoration of fish habitat and passage, and estimate of the reduction of fish taking in water diversions**.	**a**	**Identify appropriate replacement diversion structures. Estimate potential fish habitat, passage and survival gains associated with the new structures.**
		b	**Identify opportunities for consolidation of one or more diversion structures.**
		c	**Estimate cost and feasibility of replacement structures.**
		d	**Identify partnerships and cost share.**
3	**Prioritize the diversion structure replacements.**	**a**	**Prioritize replacements based on feasibility, costs, cost share and fish recovery potential.**
4	**Make the information available for implementation of the Council's Habitat Program Measures**.	**a**	**Enter information into a GIS system.**
		b	**Complete report of the inventory and assessment, and a map showing the prioritized diversion replacement structures.**

Objective schedules and costs

Obj #	Start date mm/yyyy	End date mm/yyyy	Measureable biological objective(s)	Milestone	FY2000 Cost %
1	10/1999	7/2000	Identify all push-up dam diversion structures where there exist fish passage obstruction.	Complete Inventory	40%
2	5/2000	10/2000	Select the most effective replacement structure for improving fish passage. Estimate the gain in fish production.	Complete Assessment	20%
3	10/2000	10/2000	Prioritize push-up dam replacements through-out the basin to provide most cost-effective fish habitat improvements.	Complete Prioritization	10%
4	4/2000	12/2000	Produce report and map showing push-up dam assessment.	Complete report and map.	30%
				Total	100%

Schedule constraints
Obtaining access to diversion sites in objective 1. Need to assess the existing structures during the late irrigation season in July and August which forces the report completion date beyond FY 2000.
Completion date
December 15, 2000

Section 5. Budget

FY99 project budget (BPA obligated):	$**None**

FY2000 budget by line item

Item	Note	% of total	FY2000 ($)
Personnel	2.5 persons @ 6 months each		$88,000
Fringe benefits			$25,000
Supplies, materials, non-expendable property	Miscellaneous field gear, equipment rentals.		$3000
Operations & maintenance			
Capital acquisitions or improvements (e.g. land, buildings, major equip.)	Two hand-held GPS systems; 2 Palm Pilots; etc.		$2000
NEPA costs			
Construction-related support			
PIT tags	# of tags:		
Travel	Vehicle, per diem, hotel.		$12,500
Indirect costs			$5000
Subcontractor	Field access and location aid; GIS work; reporting and mapping.		$50,000
Other	Publishing and printing		$2000
TOTAL BPA REQUESTED BUDGET			$187,500

Cost sharing

Organization	Item or service provided	% total project cost (incl. BPA)	Amount ($)
Note: In the implementation phase, beyond FY 2000, cost-share will be 50-50.			
Total project cost (including BPA portion)			

Outyear costs

	FY2001	FY02	FY03	FY04
Total budget	$200,000	$200,000	$200,000	$200,000

Section 6. References

Watershed?	Reference
X	Wy-Kan-Ush-Mi-Wa-Kish-Wit, Volumes I And II, CRITFC, 1995.
	1994 Columbia River Fish and Wildlife Program, Northwest Power Planning Council, 1994.
	John Day River Basin Report, Water Resources Department, Oregon, Nov. 1986
	Upper John Day Optimization Study, Stream Restoration Program for the Middle Fork Subbasin of the John Day River Basin, Oregon Water Resources Department in cooperation with Bureau of Reclamation, Canyon City, Oregon, March 4, 1991.
	Upper John Day Water Optimization Study, Upper John Day River Basin, Master Water Plan Working Paper, Prepared for the John Day Basin Council, by the Bureau of Reclamation, September, 1990.
	Upper John Day Water Optimization Study, Final Draft Stream Restoration Program for the Rock Creek Tributary of the John Day River, Bureau of Reclamation, January 1993.
	Upper John Day Water Optimization Study, Draft Stream Restoration Program for the Upper South Fork of the John Day River, Bureau of Reclamation, June 1993.
	Upper John Day Water Optimization Study, Draft Stream Restoration Program for the Upper Main Stem of the John Day River, Bureau of Reclamation, June 1992.

PART II - NARRATIVE

Section 7. Abstract

The goal of this proposal is to provide a watershed assessment of cost-effective replacements to instream, push-up dam diversion structures in the John Day River Basin. The objectives include the location of all diversion structures; the measurement of important physical site dimensions; the characterization of water rights, water measurement practices, and water use; the identification of appropriate replacement diversion structures, including opportunities for consolidation of diversions; an estimate of the gains in fish habitat, passage and survival; an estimate of cost and feasibility of replacement structures; the identification of potential partnerships and cost-share opportunities; and a report and maps from a GIS database.

The proposal is directed to the Northwest Power Planning Council's Measures 7.6 and 7.7 which call for watershed assessments of habitat recovery actions associated with activities on private lands. It supports the Council's Independent Scientific Group's recommendations that "Priority should be given to key alluvial reaches in tributary streams. A very important point is that these key reaches are not in wilderness or other protected zones; they occur in zones of intense human activity, so incentives will be required to unify stakeholders to restore habitat conditions for anadromous and resident salmonids." It also supports the Council's 1997 Independent Science Review Panel recommendation to perform watershed assessments prior to doing watershed restoration activities. After completion of the water diversion assessment in FY 2000, Reclamation proposes to enter a multi-year implementation phase in the John Day Basin based on priorities established in this proposal. The replacement of push-up dams in the implementation phase would parallel the work that Reclamation performed with its partners in the John Day Basin under Program Measure 7.8.H.

Section 8. Project description

a. Technical and/or scientific background

The Pacific Northwest Power Planning Council's 1994 Fish and Wildlife Program Measure 7.6 defined the habitat goals, policies and objectives essential to the recovery of wild and naturally spawning salmon and steelhead populations in the Columbia River basin. The Program says (page 7-31), "Wild and naturally spawning populations of salmon and steelhead are generally at low levels throughout the Columbia River basin as a result of impaired mainstem passage, blocked habitat, habitat degradation, fishing, predation, and other sources of mortality." The Council recommends comprehensive watershed management that addresses habitat degradation with dramatic steps to "protect existing high quality habitat, improve the quality of degraded habitat, and increase the quantity of presently blocked habitat that could be made accessible."

The 1994 Program also called on the Bonneville Power Administration to fund an Independent Scientific Group (ISG) to make scientific recommendations for the salmon

and steelhead recovery. In the report, Return to the River (Chapter 11, Conclusions and Implications), the ISG recommended that "Freshwater habitat for all life history stages must be protected and restored with a focus on key alluvial river reaches and lakes. Restoring habitat and access to habitat that re-establishes phenotypic diversity in salmonid populations should be a priority...Priority should be given to key alluvial reaches in tributary streams. A very important point is that these key reaches are not in wilderness or other protected zones; they occur in zones of intense human activity, so incentives will be required to unify stakeholders to restore habitat conditions for anadromous and resident salmonids."

Meanwhile Council Measure 7.7 directed Federal, State, Tribal and private interests to implement a model watershed program to undertake Measure 7.6 activities with private landowners. Over the past four years, under Council Measure 7.8.H, the Bureau of Reclamation worked cooperatively with public entities and private landowners on three model watershed projects in Oregon and Idaho to improve streamflows, water quality and fish passage while increasing the reliability of water service to irrigated agriculture.

In the John Day River basin in Oregon, Reclamation has demonstrated the feasibility of replacing push-up dams to promote salmon and steelhead rearing and migration. Push-up dam irrigation diversion structures throughout the Columbia River basin affect spawning, rearing and migration of salmon and steelhead. Often the structures completely de-water a stream from the point of diversion to the point of return flow. In other cases, upstream fish passage may be blocked directly by the structure. Sometimes temporary but significant water quality degradation occurs due to mechanical changes to the stream channel. Access usually restricts the establishment of riparian vegetation. Finally the gravity diversions are often unscreened and fish become entrained in the diversion canals. In the John Day River demonstration projects, engineers from several agencies employed simple, cost-effective technologies approved by local landowners and resource agencies to replace several push-up dam structures with more fish-friendly diversion structures.

Unfortunately Federal, State, Tribal and local landowner representatives obtain little guidance as to the priority of watershed restoration projects. In the 1997 Independent Science Review Panel's report to the Northwest power Planning Council, under Section 4(h)(11)(D)(v) of the 1996 Amendment to the Northwest Power Act, the ISRP recommended that reliable watershed assessments should precede the implementation of habitat restoration projects. In response the Council has worked with the Columbia Basin Fish and Wildlife Authority to establish criteria in the selection of watershed restoration projects. These criteria help assure that planning precedes action.

This proposal will provide a watershed assessment of push-up dam diversion activity in the John Day River Basin. It will prioritize the replacement of push-up dams in Basin based on cost-effective salmon habitat restoration and irrigation water delivery potential. The proposal will create a GIS inventory of diversions structures and relevant salmon and steelhead habitat use, and perform a preliminary engineering feasibility and cost assessment of diversion structure replacement. The engineering assessment will include a

physical description of the existing structure, upstream and downstream river dimensions, and proposed alternatives to the existing structure, such as consolidation, pump systems, infiltration galleries, and permanent diversions with positive fish passage. Each alternative will be given a preliminary cost estimate.

b. Rationale and significance to Regional Programs

This proposal supports the Council's Fish and Wildlife Program Measure 7.6 Habitat Goal, Policies and Objectives, and Measure 7.7 Cooperative Habitat Protection and Improvement with Private Landowners. In Measure 7.6 the Council calls for cooperative activities undertaken by Federal, State, Tribal and private parties, using comprehensive watershed management plans (7.6.A.1); the protection and improvement of salmon and steelhead, including habitat improvement activities such as the re-opening of habitat that is currently blocked by human activity (7.6.A2); the coordination of land and water activities to protect and improve salmon and steelhead productivity through local cooperation and coordination between resource managers and private parties (7.6B.1); emphasis on projects that are integrated into broader watershed planning efforts that include cooperative agreements with private landowners (7.6.B.3) ; priority to actions that have a high probability of succeeding at a reasonable cost (7.6.B.4); and the coordination of habitat plans on public and private lands, based on locally adopted watershed plans that use sound watershed management principles and extensive collaboration among Federal land and water management agencies, States, Tribes, and private land owners (7.6C).

In Measure 7.7 the Council emphasizes the need for watershed plans to protect and improve salmon and steelhead habitat on private lands. The Council proposes funding activities that create State agency leads and State watershed coordinators. It also asks each State to use its agencies and coordinators to establish focus or model watersheds which serve to test the implementation of watershed plans for the protection and improvement of habitat on private lands.

Over the past four years three model watershed projects in Oregon and Idaho have been the testing ground for the implementation of the Council's habitat measures under Measures 7.6 and 7.7 on private lands. The Bureau of Reclamation has worked cooperatively with public entities and private landowners on projects to improve streamflows, water quality and fish passage while increasing the reliability of water services to irrigated agriculture. These projects included the replacement of instream push-up diversion dams with innovative new diversion structures that allowed fish passage and provided instream flows.

This proposal addresses Measure 7.6 by assessing all instream diversion structures and prioritizing future work to eliminate or consolidate instream diversion dams with diversion structures that allow successful salmon and steelhead migration and rearing in stream segments that are currently de-watered or obstructed by irrigation diversion activity (7.6.A.2).

The proposal includes two phases. In Phase I a FY 2000 inventory will determine the

location of instream diversion dams for the John Day River basin; the land ownership and irrigation activity associated with the diversion, including the water right and the water measurement methods; the stream classification; fish inventories and recovery goals; and related fish enhancement or mitigation work. Then each diversion dam will be assigned a priority based on its potential benefit to fish recovery as specified in the Council Program. Finally the data will be added to a GIS system and a map will be reproduced to accompany a report of the project findings.

After the initial inventory and prioritization activity in FY 2000, Phase II activities will implement the priorities set in Phase I.

c. Relationships to other projects

Reclamation is completing demonstration projects under the NPPC's 1994 Fish and Wildlife Program to help restore anadromous fish populations in the Columbia River Basin. The demonstration projects address a number of issues and problems facing anadromous fish, including fish passage, water temperature, water quality, and low flows.

The John Day basin demonstration projects, implemented in partnership with a number of entities in the basin, replaced gravel push-up dams with a variety of diversion structure alternatives. These alternatives include ditch consolidations, permanent diversion structures with positive fish passage, infiltration galleries, and installation of pump stations. Projects have also included the installation of underground drains that return cooler water to the river. The Grant Soil and Water Conservation District has helped to coordinate project activities with State and Federal agencies, local governments, interest groups, and private landowners. Additional liaison activities are provided by the Confederated Tribes of the Warm Springs Reservation.

The Bonneville Power Administration has funded other habitat restoration projects in the John Day River Basin under the Council's Fish and Wildlife Program, including habitat improvement projects to increase spawning and rearing habitat, protect riparian zones, stabilize stream channels, open side channels, and provide fish passage. Several push-up dam replacement projects are proposed for funding in fiscal year 1999.

The National Marine Fisheries Service provides Mitchell Act funds to the Oregon Department of Fish and Wildlife to maintain a fish screen construction shop in the town of John Day. The Department then selectively adds or replaces fish screens on diversion structures in cooperation with landowners.

Several local watershed councils have been active in the Basin. Currently a council in the North Fork exists. However there exists no watershed action plan that prioritizes fish recovery work in the Basin.

d. Project history (for ongoing projects)

This is a new project proposal.

e. Proposal objectives

1. Inventory (locate and describe) existing diversion structures in the basin.
2. Assess the diversion structures to identify alternatives that will meet the needs of the irrigation water diverter while improving fish habitat and passage.
3. Develop a priority list for replacement of diversion structures.
4. Disseminate information through preparation of a report and development of a data base that can provide guidance for implementation of a program to replace existing diversion structures.

f. Methods

Initial efforts will involve extensive field work to locate and describe all diversion structures in the basin. Staff from the Grant County Soil and Water Conservation District will assist Reclamation staff in gaining access to diversion structure sites. The site locations will be determined through the use of hand-held GPS units. Information collected at each site will include type of diversion structure, physical dimensions, stream type, water right, water use, and water measurement practices. Data on fish resources associated with the site, such as fish species and habitat conditions, will also be obtained. This site information will be used as the basis of various layers to be entered into a GIS data base. A subcontractor will be used to undertake the GIS work.

Data gathered in the inventory will be used to assess the feasibility of replacing the diversion structures and the potential for restoring fish habitat through replacement. An appropriate replacement structure will be identified, including the potential for consolidating diversions, that meets the needs of the water user while improving fish habitat. Determination of appropriate alternatives will require that existing structures be observed while in operation during the irrigation season. The cost of proposed replacement structures will be estimated and compared with factors such as potential benefits and willing partners to determine the feasibility for implementation. The potential for obtaining cost-share from other federal and non-federal sources will also be considered.

Based on the assessment of feasibility, costs, cost-share potential, and benefits to fish resources, a priority list will be developed to guide future efforts to implement diversion structure replacement projects. A report will be produced with a map showing the location and prioritization of the replacement diversion structures. Data on each diversion structure site will be made available as an additional layer in an existing GIS data base system.

g. Facilities and equipment

Equipment purchases include two hand-held GPS receivers, two electronic scheduler and note taking devices, and some other miscellaneous equipment ($2000).

h. Budget

The proposed $187,500 budget detailed in Section 5 will cover all costs associated with personnel, travel, equipment, subcontracts, mapping and reports. Expenditures from the proposed budget will spread throughout the duration of the project with the highest rate of expenditures occurring during the late summer season while several activities will be ongoing at the same time.

Section 9. Key personnel

Three Reclamation engineers and planners will work 1.25 person-years with technicians, biologists, GIS experts, and report writers. Some field contract work associated with obtaining property access and locating diversion activities will require about 80 person-days. A biologist will spend approximately 60 days to review and report fish population and habitat factors at each diversion site in order to help prioritize proposed diversion alternatives. A writer will work approximately 45 days to compile and publish the report. A contractor GIS expert will complete data entry and mapping in approximately 45 days.

Section 10. Information/technology transfer

The project report and mapping will be available to agencies and entities concerned with resource issues in the John Day Basin. The information provided will allow greater coordination of efforts in stream betterment and future planning. In particular Reclamation hopes that the Oregon Governor's Watershed Enhancement Board will make the information available to John Day citizens for use by local watershed councils. The GIS work will add important information to an existing system that is accessible to the public. Ample copies of the report and mapping will be prepared to allow availability to any interested group or individual.

Congratulations!